



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Am

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,137	11/21/2001	William Lo	MP0083	2100

23624 7590 05/18/2005

MARVELL SEMICONDUCTOR, INC.
INTELLECTUAL PROPERTY DEPARTMENT
700 FIRST AVENUE, MS# 509
SUNNYVALE, CA 94089

EXAMINER

PATEL, NITIN C

ART UNIT	PAPER NUMBER
----------	--------------

2116

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,137

Applicant(s)

LO, WILLIAM

Examiner

Nitin C. Patel

Art Unit

2116

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-145 is/are pending in the application.
- 4a) Of the above claim(s) 1-5, 15-34, 44-63, 73-121 and 131-145 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-14, 35-43, 64-72 and 122-130 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 145-166 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This is in responsive to amendment filed on 13 April 2005.
2. Claims 1 – 5, 15 – 34, 44 – 63, 73 – 121, and 131 – 145 have been cancelled.
3. Newly submitted claims 146 - 166 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The newly added claims 146 – 166 drawn to an invention nonelected Group II classified in class 709 subclass 220, 223 – 224, 227, without traverse as per previous office action mailed on 9 December 2004.

4. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as energy saving circuit. In the instant case, invention II has separate utility such as physical layer device. See MPEP j 806.05(d).
5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
6. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 146 - 163 withdrawn from consideration

Art Unit: 2116

as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

7. Claims 9, 13, 38, 42, and 67, are objected to because of the following informalities:

8. In the claim 9, “ a second timer” in line 3 on page 4 is objected as either “a first timer is missing” or a second timer is “first timer” or “a timer” independent of a first timer.

9. In the claim 13, replace “said second physical layer” in line 4 on page 5 with ---a second physical layer--- as second physical layer has not previously recited in the claim.

10. In the claim 38, “ a second timing means” in line 11 on page 7 is objected as either “a first timing means is missing” or a second timing means is “a first timing means” or “a timing means” independent of a first timing means.

11. In the claim 42, replace “said second physical layer” in line 10 on page 8 with ---a second physical layer--- as second physical layer has not previously recited in the claim.

12. In the claim 67, “ second timer” in line 13 on page 10 is objected as either “a first timer is missing” or a second timer is “a first timer” or “a timer” independent of a first timer.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2116

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 6 - 8, 35 - 37, 64 - 66, and 122 - 124 rejected under 35 U.S.C. 103(a) as being unpatentable over Bar-Niv, US Patent 6,442, 142 B1, and further in view of Andra et al. [hereinafter as Andra], US Patent 6,883,025 B2.

14. As to claims 9, 35, 64, and 122, Bar-Niv discloses a system and method to reduce power consumption of a communication transceiver comprising: a sense circuit [10 energy detection circuit] that communicates with said receiver [12, transceiver which inherently includes receiver and transmitter] and that generates a receive signal [Energy-on signal to level 1, control output to power-up power module 30] when connection activity [signal level] that exceeds a first threshold [voltage on communication line exceeds 300mV] is detected by said receiver [12], wherein said energy saving circuit [10] powers down [by generating Energy-on signal to level 0] said first physical layer [32, transceiver circuitry] when said receiver does not detect said connection activity for a first predetermined period to reduce power consumption of said first physical layer [col. 1, lines 51 - 67, col. 2, lines 1 - 50, col. 4, lines 6 - 67, col. 5, lines 57 - 67, col. 6, lines 1 - 32, fig. 1]; an autonegotiation circuit [36, autonegotiation

mechanism] that communicates with said sense circuit [10] and that powers up said first physical layer [32] and attempts to negotiate a connection with a second physical layer of a second network device when said sense circuit generates said receive signal [it is functionality of autonegotiation process][col. 2, lines 32 - 49, col. 5, lines 65 - 67, col. 6, lines 1 - 56]; a first timer [a timer 256 ms duration] that generates a first signal [ENERGYON from level 1 to level 0] after a first period [256 ms duration] and that is reset [aborted][state 102 to state 100, fig. 4] and generator returns to state 100 [col. 5, lines 57 - 67, col. 6, lines 1 - 31, fig. 4].

However, energy detection [sense] circuit [10] of Bar-Niv does not teach to power down the physical layer and returns to the sense state if a timer times out before autonegotiation is complete.

Andra discloses a multiple channel communication system and method for autonegotiating multiple devices with shared autonegotiating controller with a Time_out counter [first timer] to check if autonegotiation has completed within specified period of time and if autonegotiation is not completed within specified period of time, controller disables XMT state [power down] which terminates autonegotiation of that device and sets a bit of N-bit pending register representing a time out counter and autonegotiation controller proceeds to autonegotiate next port [returns to sense state] [col. 2, lines 8 - 15, col. 4, lines 6 - 36, 48 - 67, col. 5, lines 1 - 15, 60 - 67, col. 6, lines 1 - 28, col. 11, lines 50 - 64].

It would have been obvious to one of ordinary skill in art, having the teachings of Bar-Niv and Andra before him at the time of invention was made, to modify the

controller of transceiver disclosed by Bar-Niv to include a time out timer that times out if a particular port does not complete autonegotiation for specified period of time as taught by Andra in order to obtain an autonegotiation controller coupled to and shared by the plurality of communication devices and method of defining a sequential order for autonegotiating communication configuration for each of devices, maintaining a plurality of autonegotiation status indicators, and selectively autonegotiating the communication configuration information through each of devices based on status indicator [col. 2, lines 17 – 29].

15. As to claims 7, 36, 64, and 123 Andra discloses link circuit [18, autonegotiation controller] that triggers a link state [Link_status] [FLP_link_good] when autonegotiation is complete and a link with second physical layer is established [col. 8, lines 47 – 67, col 9, lines 1 - 22].

16. As to claims 8, 37, 65, and 124 Andra discloses link circuit [18, autonegotiation controller] that generates a link lost signal when said link is lost [Link_fail] [col. 10, lines 26 – 31].

17. Claims 9 – 12, 38 – 41, 67 – 70, and 125 – 128 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bar-Niv, US Patent 6,442,142 B1 [cited in previous office action], and further in view of Mills, US Patent 6,795,450 B1.

18. As to claims 9, 38, 67, and 125, Bar-Niv discloses a system and method to reduce power consumption of a communication transceiver comprising: (i) a sense circuit [10 energy detection circuit] that communicates with said receiver [34 link monitor] and that generates a receive signal [Energy-on signal to level 1, control output

to power-up power module 30] when connection activity [signal level] that exceeds a first threshold [voltage on communication line exceeds 300mV] is detected by said receiver [12], wherein said energy saving circuit [10] powers down [by generating Energy-on signal to level 0] said first physical layer [32, transceiver circuitry] when said receiver does not detect said connection activity for a first predetermined period to reduce power consumption of said first physical layer [col. 1, lines 51 - 67, col. 2, lines 1 - 50, col. 4, lines 6 - 67, col. 5, lines 57 - 67, col. 6, lines 1 - 32, fig. 1].

However Bar-Niv does not teach a timer that communicates with transmitter and that is reset when a receive signal is generated by said sense circuit.

Mills discloses a method and apparatus for link suspend operation between network nodes in point to point data communication links having a full-power and low-power link suspend mode by transmitting "link-suspend-pulses"[LSPs] and cycling transmitter power on and off, during non-data transmission period, between valid data transmission with a counter [timer] implementation [col. 9, lines 57 – 67, col. 10, lines 1 – 10, 44 – 58, col. 12, lines 49 – 67, col. 13, lines 4 – 12, 39 – 67, col. 14, lines 13 – 65, col. 24, lines 32 – 54, col. 23, lines 22 - 40].

19. As to claims 10 - 12, 39 - 41, 67 - 69, and 126 - 128, Mills teaches to implement a counter to ensure valid link therefore, he teaches to reset, timeout and generation of signal for different scenario [col. 24, lines 32 – 67].

20. Claims 13 – 14, 42 – 43, 71 – 72, and 129 – 130 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bar-Niv, US Patent 6,442,142 B1 [cited in previous office action], and further in view of Crayford, US Patent 5,610,903.

21. As to claims 13, 42, 71, and 129, Bar-Niv discloses a system and method to reduce power consumption of a communication transceiver comprising: (i) a sense circuit [10 energy detection circuit] that communicates with said receiver [34 link monitor] and that generates a receive signal [Energy-on signal to level 1, control output to power-up power module 30] when connection activity [signal level] that exceeds a first threshold [voltage on communication line exceeds 300mV] is detected by said receiver [12], wherein said energy saving circuit [10] powers down [by generating Energy-on signal to level 0] said first physical layer [32, transceiver circuitry] when said receiver does not detect said connection activity for a first predetermined period to reduce power consumption of said first physical layer [col. 1, lines 51 - 67, col. 2, lines 1 - 50, col. 4, lines 6 - 67, col. 5, lines 57 - 67, col. 6, lines 1 - 32, fig. 1].

However Bar-Niv does not teach switching circuit that senses a connection configuration of second physical layer and that adjusts a connection configuration of said first physical layer to match said connection configuration of second physical layer.

Crayford discloses a system and method for an autonegotiation to determine [sensing by determining test pattern] whether there are the half duplex or full duplex [enhanced capabilities] between first and second station by providing a specified pattern of link test and a switching circuit [controller] for entering into half or full duplex mode of communication [col. 5, lines 26 - 40, col. 10, lines 55 - 67, col. 11, lines 1 - 2, col. 9, lines 23 - 53, col. 12, lines 1 - 67, col. 28, lines 1 - 15, fig. 1, 4 - 6].

It would have been obvious to one of ordinary skill in art, having the teachings of Bar-Niv and Crayford before him at the time of invention was made, to modify the

controller of transceiver disclosed by Bar-Niv to include a switching circuit [controller's functionality] that senses [by detecting a pattern received from] a connection configuration [half/full duplex] of second physical layer and adjust [enter into] to match connection configuration [half/full duplex] of second physical layer as taught by Crayford in order to obtain an improvement in efficiency of operation of devices within a communication network [abstract, col. 6, lines 15 – 26].

22. As to claims 14, 43, 72, and 130 Bar-Niv teaches to generate a control signal [Energy-on] to control the power of transceiver circuitry [32] therefore, the same signal can be used to indicate status of the network device with LEDS as indicating device, which are common in use for indicating the status.

23. **Examiner's note:** Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant.

Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

24. **Prior Art not relied upon:** Please refer to the references listed in attached PTO-892, which, are not relied upon for claim rejection since these references are relevant to the claimed invention.

Response to Arguments

25. Applicant's arguments with respect to claims 6 – 14, 35 – 43, 64 – 72, and 122 – 130 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin C. Patel whose telephone number is 571-272-3675. The examiner can normally be reached on 6:45 am - 5:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne H. Browne can be reached on 571-272-3670. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nitin C. Patel
May 13, 2005



REHANA PERVEEN
PRIMARY EXAMINER